

CLAIMS:

1. A transflective liquid crystal display comprising a plurality of pixels, a liquid crystal layer (3) and an optical layer (7) comprising a birefringent material, said pixels being divided into at least one transmissive subpixel (5) and at least one reflective subpixel (4), and said optical layer (7) being patterned into domains (8, 9), each covering at least part of a reflective subpixel (4) or at least part of a transmissive subpixel (5), the birefringent material in a first domain (8) covering a reflective subpixel (4) of a pixel having a first birefringence and the birefringent material in a second domain (9) covering a transmissive subpixel (5) of said pixel having a second birefringence, wherein the first and second birefringence are different from each other and adapted independently to improve the viewing angle dependence for the reflective and transmissive subpixels respectively.
2. A transflective liquid crystal display according to claim 1, wherein the birefringent material of the optical layer (7) in the first domain (8) and in the second domain (9) are made from the same material.
3. A transflective liquid crystal display according to claim 1, wherein the birefringent material is a material with positive birefringence.
4. A transflective liquid crystal display according to claim 1, wherein the birefringent material is a material with negative birefringence.
5. A transflective liquid crystal display according to claim 1, wherein the tilt of the optical axis of the birefringent material in the optical layer (7) in the first domain (8) is different from the tilt of the optical axis of the birefringent material in the optical layer in the second domain (9).
6. A transflective liquid crystal display according to claim 1, wherein the direction of the optical axis of the birefringent material in the optical layer (7) in the first

domain (8) is different from the direction of the optical axis of the birefringent material in the optical layer in the second domain (9).

7. A transreflective liquid crystal display according to claim 1, wherein the
5 retardation of the birefringent material in the optical layer (7) in the first domain (8) is
different from the retardation of the birefringent material in the optical layer in the second
domain (9).

8. A transreflective liquid crystal display according to claim 5, wherein the tilt of
10 the optical axis of said birefringent material in the optical layer (7) in either the first or the
second domain varies over a thickness of the optical layer.

9. A transreflective liquid crystal display according to claim 1, wherein the
birefringent material of the optical layer in the domains covering transmissive and/or
15 reflective subpixels is a cholesterically ordered material.

10. A transreflective liquid crystal display according to claim 9, wherein a
cholesteric pitch of the birefringent material in the optical layer in a first domain (8) is
different from a cholesteric pitch of the birefringent material in the optical layer in the second
20 domain (9).

11. A transreflective liquid crystal display according to claim 1, wherein said optical
layer (7) comprises at least two sublayers, at least one of said sublayers being patterned into
domains.

25
12. A transreflective liquid crystal display according to claim 1, wherein the optical
layer in the second domain (9) comprises a viewing angle compensator.

13. A transreflective liquid crystal display according to claim 1 or 12, wherein the
30 optical layer in the first domain (8) comprises a quarter wave retarder.

14. A transreflective liquid crystal display according to claim 13, wherein the
retardation of said $\lambda/4$ -retarders is in the range of 100 to 200 nm.

15. A transreflective liquid crystal display according to any preceding claim, wherein the optical layer (7) is obtainable by a method according to any one of claims 16-22.

16. Method for the manufacture of a patterned optical layer, said method
5 comprising:
providing a photo-polymerisable mixture having a liquid crystalline phase;
aligning said mixture;
performing a first irradiation of the mixture under a first reaction condition, to
polymerize a first domain of photo-polymerisable mixture in a first configuration exhibiting a
10 first birefringence;
performing a second irradiation of the mixture under a second reaction
condition to polymerize a second domain of the photo-polymerisable mixture in a second
configuration exhibiting a second birefringence.

15 17. A method according to claim 15, wherein said aligning is performed by photo-alignment or by alignment on a rubbed alignment film.

18. A method according to claim 16, further comprising a converting step, in
which a convertible compound comprised in said photo-polymerisable mixture is converted,
20 thereby changing the tilt of the liquid crystal molecules and/or the helical twist and/or the
retardation of the mixture.

19. A method according to claim 16, further comprising an evaporation step, in
which a volatile compound comprised in the photo-polymerisable mixture evaporates from
25 the mixture, thereby changing the tilt of the liquid crystal molecules.

20. A method according to claim 16, further comprising a photo-alignment step, in
which photo-alignable liquid crystal molecules are irradiated, thereby changing the tilt
orientation of said photo-alignable liquid crystal molecules of the liquid crystalline mixture.
30

21. A method according to claim 16, wherein the temperature at the first reaction
condition is different from the temperature at the second reaction condition.

22. A method according to claim 16, wherein the atmosphere at the first reaction condition is different from the atmosphere at the second reaction condition.